System for quality control of detector liquids during production

Milind Diwan

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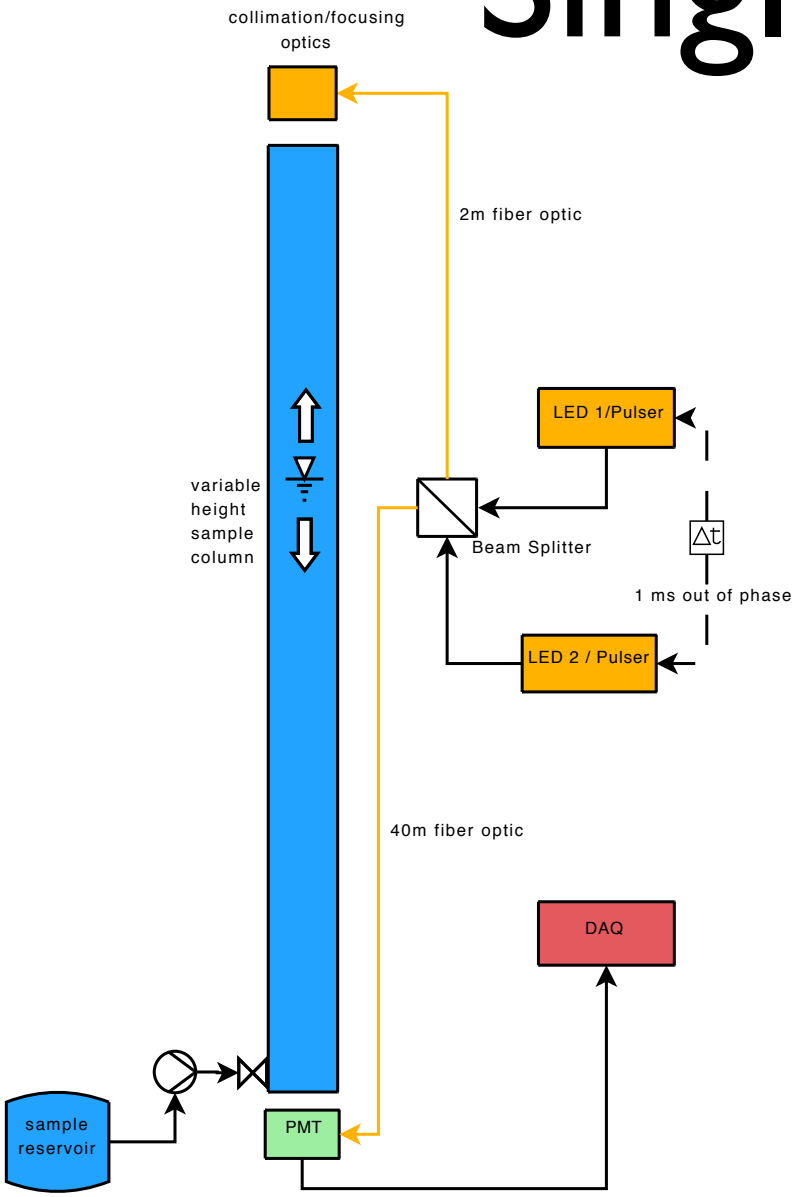
Purpose

- Large production facility being planned at Dayabay for various liquids.
- A standardized single system for quality control of optical properties is needed.
- Following proposal is based on the system developed at BNL over last several months.
- BNL system is under use for very precise studies. Johnny Goett has presented results.

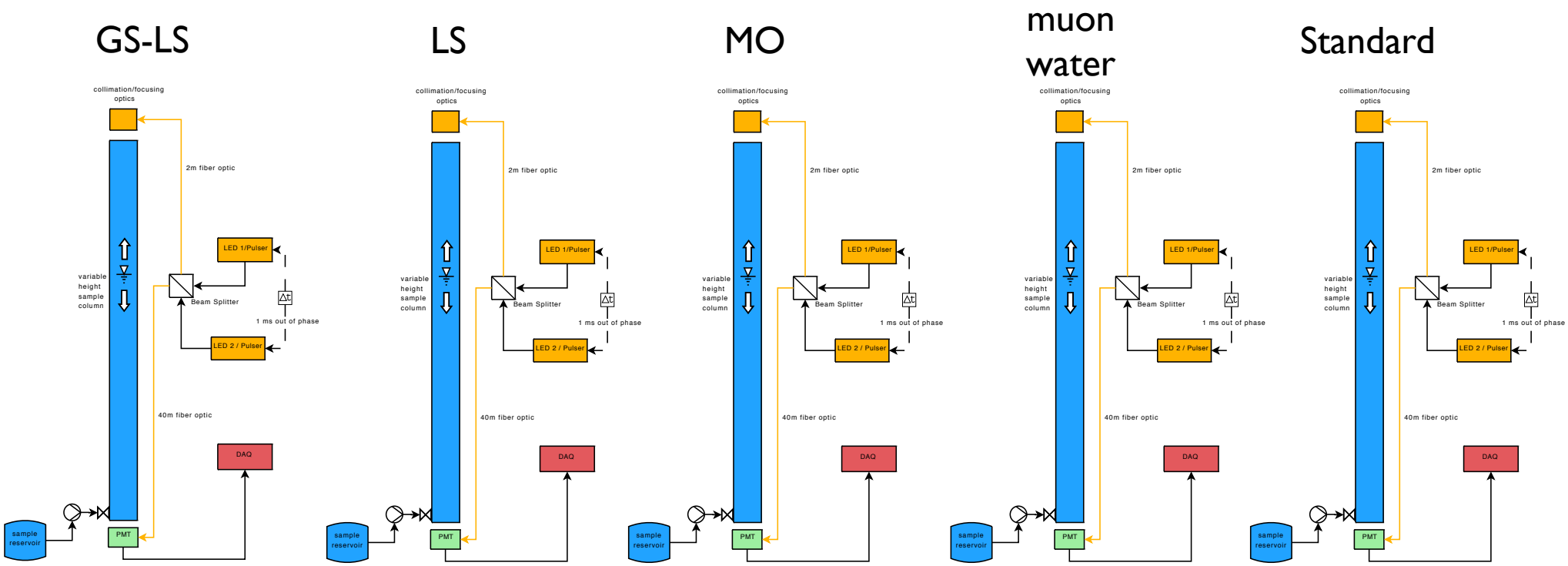
Single element



Benefits

- Tube is teflon coated stainless steel.
- Optics is based on fibers and leds and so it is robust and self calibrating.
- A peristaltic pump (labview controllable) used to obtain samples from production reservoir.
- All components are off-the-self.
- 0.1% stability has been demonstrated.
- A cover gas (for inert atmosphere) can be used.
- Single DAQ can be used for upto 8 tubes.

The entire system



All 5 served by a single VME DAQ system

5 tubes will prevent cross-contamination.

The standard can be used to make sure of environmental stability.

Cost and schedule

	Unit cost	Units	production
SS Tube	$800	5	3 months
quartz window	$500	5	2 months
Optics	$1500	5	1 week
Cables+SMA connectors	$100	5	1 week
HV	$1500	3	1 month
VME crate	$6000	1	1 month
VME controller	$5000	1	2 months
Flash ADC	$10000	1	2 months
PMT	$1500	5	available
Mechanical components	$5000	1	In house machinist
Total		$55,500	

Summary

- Will require 3-4 months of effort on software.
- Can be assembled quickly.
- Almost all parts are off-the-shelf.
- Will require a single person to install.
- No engineering needed.